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| 09/857,340 | 06/04/2001 | Edward E Tapanes | 43153-9062 | 3208 |

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#9

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Applicati n No. 09/857,340 | Applicant(s) TAPANES ET AL. | |
|---|---|---|---|
| | Examiner Krystyna Suchecki | Art Unit 2882 | |

*-- Th MAILING DATE of this communication appears on the cover sh t with th correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-28 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-15 and 19-28 is/are rejected.

7)☒ Claim(s) 13 and 16-18 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) ✓ ✓ ✓
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 6-8 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

### *Specification*

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

3. The disclosure is objected to because of the following informalities: a sensing system has been defined as a laser (Page 28, line 18).

4. Appropriate correction is required.

### *Claim Objections*

5. Claim 13 is objected to because of the following informalities: "suppled" is understood to mean "supplied". Appropriate correction is required.

6. Claims 16-18 are objected to under 37 CFR 1.75(c) as being in improper form because the claims are method claims that depend from apparatus claims. Where a claim in dependent form is not considered to be a proper dependent claim under 37 CFR 1.75(c), the claim must be cancelled or rewritten to be in proper dependent claim or independent form. See Ex parte Porter, 25 USPQ2d 1144, 1147 (Bd. of Pat. App. & Inter. 1992). See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

### *Claim Rejections - 35 USC § 102*

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 3-20 and 22-28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Udd (US 5455698).

9. Regarding Claim1, Udd teaches an apparatus for monitoring a structure and for locating the position of an event (Column 9, lines 14-17 and Figure 8) including:

a. a light source (Figure 8, item 819);

b. a waveguide (Figure 8, item 803) for receiving light from the light source so that the light is caused to propagate in both directions along the waveguide to thereby provide counter-propagating optical signals in the waveguide, the waveguide being capable of having the counter-propagating optical signals or some characteristic of the signals modified or effected by an external parameter caused by or indicative of the event to provide modified counterpropagating optical signals which continue to propagate along the waveguide; and

c. detector means for detecting the modified counter propagating optical signals effected by the parameter and for determining the time difference between the receipt of the modified counter-propagating optical signals in order to determine the location of the event (Figure 8, item 823).

10. Regarding Claim 3, Udd teaches the apparatus of claim 1 wherein light source is for launching simultaneously into opposite ends of the waveguide (Figure 8).

11. Regarding Claim 4, Udd teaches the apparatus of claim 1 wherein the light source is a single light source (Figure 8, item 819).

12. Regarding Claim 5, Udd teaches the apparatus of claim 1 wherein the waveguide is one or more optical fibres which forms an event sensitive optical fibre (Column 9, lines 14-17 and Figure 8).

13. Regarding Claim 6, Udd teaches the apparatus of claim 1 wherein further silica waveguides are connected to the said waveguide at either or both ends in order to add additional delay between the transmissive counter-propagating signals and to provide insensitive lead waveguides (Figure 8, item 820 and connection of items 803 to item 813.

14. Regarding Claim 7, Udd teaches the apparatus of claim 1 wherein the detector means comprises: first and second photodetectors (Figure 23, items 2325, 2327) for simultaneously receiving the radiation from the counter-propagating signals in the waveguide; and processing means (Figure 23, items 2321 and 2323) for receiving signals from the first and second photodetectors for determining the time delay or difference between the signals effected from the same disturbance and therefore determining the location of the sensed event (Column 18, lines 6-10).

15. Regarding Claim 8, Udd teaches the apparatus of claim 7 wherein a waveguide coupler or set of couplers is arranged between the light source and the photodetectors and the silica waveguide so that the light can be simultaneously transmitted from the light source to both ends of the silica waveguide and the detector means also being connected to the coupler or couplers so that the counter-propagating transmissive radiation can be directed via the coupler or couplers from the silica waveguide to the detector means (Column 18, lines 6-10).

16. Regarding Claim 9, Udd teaches the apparatus of claim 1 wherein the waveguide is for connection to the structure to monitor the structure (Abstract).

17. Regarding Claim 10, Udd teaches the apparatus of claim 1 wherein the structure comprises the waveguide for transmitting data along the waveguide from one place to another and the waveguide simultaneously receiving the light from the light source to provide the counter-propagating optical signals so as to enable the integrity and security of the waveguide to be monitored (Figure 23).

18. Regarding Claim 11, Udd teaches the apparatus according to claim 1 wherein the detector also identifies or quantifies the parameter from the modified counter-propagating optical signals (Column 18, lines 6-10).

19. Regarding Claim 12, Udd teaches the apparatus of claim 1 wherein waveguide is arranged in a loop configuration so that light can be simultaneously launched into both ends of the waveguide from a single light source (Figures 8 and 23).

20. Regarding Claim 13, Udd teaches the apparatus of claim 11 wherein data signals are supplied to the waveguide so that the waveguide acts as a communication link for transmission of data from one place to another and the launching of the counter propagating optical signals in the waveguide enables the integrity and security of the waveguide to be monitored (Abstract).

21. Regarding Claim 14, Udd teaches the apparatus according to claim 11 wherein the waveguide is applied to a structure to monitor the structure (Column 2, lines 44-45).

22. Regarding Claim 15, Udd teaches a method for monitoring a structure to locate the position of an event, including the steps of:

d. launching light into a waveguide so~that the light is caused to propagate in both directions along the waveguide to thereby provide counter-propagating optical signals in the waveguide, the waveguide being capable of having the counter-propagating optical

signals or some characteristic of the signals modified or effected by an external parameter caused by the event, to provide modified counter-propagating optical signals which continue to propagate along the waveguide (Figure 23); and

e. detecting the modified counter-propagating optical signals effected by the parameter and for determining the time difference between the receipt of the modified signals in order to determine the location of the event (Figure 23 and Column 18, lines 6-10).

23. Regarding Claim 19, Udd teaches a waveguide transmissive counter-propagating signal method for locating events in optical waveguides, which may include:

f. providing a sensing optical fibre formed from a waveguide material designed to simultaneously transmit counter-propagating optical signals (Figure 1, items 107 and 109);

g. providing a detector for locating events in optical waveguides (Figure 1, item 117);

h. providing a lead optical fibre formed from a waveguide material which acts as an insensitive light guide between the sensing fibre and detector (Column 4, lines 35-37);

i. providing a lead optical fibre formed from a waveguide material which acts as an insensitive light guide between the sensing fibre and a light source (Figure 1, item 113);

j. connecting the sensor waveguide and the lead optical fibres so that cores of the waveguides are aligned and remain fixed at the splice (Column 21, line 37 and Column 22, lines 15-23);

k. launching counter-propagating light signals into the sensing optical fibre and lead optical fibres, which light signals are modified upon disturbance of the sensing optical fibre so that modified counter propagating optical signals continue to propagate along the sensing fibre (Column 18, lines 3-21);

l. delivering the modified counter-propagating signals from the waveguide fibre, via the lead optical fibres, to the detector so the time difference between the receipt of the modified counter-propagating signals may be measured and utilised to determine the location of the sensed event (Column 18, lines 3-21); and

m. registering any changes in the waveguide sensor optical signals so that the sensed parameter may be quantified and/or identified (Column 18, lines 3-21).

24. Regarding Claim 20, Udd teaches an apparatus for monitoring an optic fibre communication link into which data signals are launched and from which the data signals are received, and for locating the position of a disturbance to the link including:

n. a light source for launching light into the link so that the light is caused to propagate in both directions along the link to thereby provide counter propagating optical signals in the link, the link being capable of having the counter-propagating optical signals or some characteristic of the signals modified or effected by the disturbance to provide modified counter-propagating optical signals which continue to propagate along the link (Column 18, lines 3-21); and

o. detector means for detecting the modified counter-propagating optical signals and for determining the time difference between the receipt of the modified

counter-propagating optical signals in order to determine the location of the disturbance (Column 18, lines 3-21).

25. Regarding Claim 22, Udd teaches the apparatus of claim 20 wherein the light source is for launching simultaneously into opposite ends of the link (Figure 1).

26. Regarding Claim 23, Udd teaches the apparatus of claim 20 wherein the light source is a single light source (Figure 1, item 111).

27. Regarding Claim 24, Udd teaches the apparatus of claim 20 wherein the detector means comprises:

p. first and second photodetectors for simultaneously receiving the light from the counter-propagating signals in the link (Figure 23, items 2327 and 2331); and

q. processing means for receiving signals from the first and second photodetectors for determining the time delay or difference between the signals effected from the same disturbance and therefore determining the location of the disturbance (Column 18, lines 3-21).

28. Regarding Claim 25, Udd teaches the apparatus of claim 24 wherein a waveguide coupler or set of couplers is arranged between the light source and the photodetectors and the link so that the light can be simultaneously transmitted from the light source to both ends of the link and the detector means also being connected to the coupler or couplers so that the counter-propagating signals can be directed via the coupler or couplers from the link to the detector means (Figure 23).

29. Regarding Claim 26, Udd teaches a method for monitoring an optical fibre communication link into which data signals are launched and from which the data signals are received, to locate the position of a disturbance to the link, including the steps of:

r. launching light into the link so that the light is caused to propagate in both directions along the link to thereby provide counter-propagating optical signals in the link, the link being capable of having the counter-propagating optical signals or some characteristic of the signals modified or effected by the disturbance to provide modified counter-propagating optical signals which continue to propagate along the link (Figure 23); and

s. detecting the modified counter-propagating optical signals effected by the disturbance and for determining the time difference between the receipt of the modified signals in order to determine the location of the disturbance (Column 18, lines 3-21).

30. Regarding Claim 27, Udd teaches the method of claim 26 wherein the light is launched into both ends of the link to provide the counter-propagating signals (Figure 23).

31. Regarding Claim 28, Udd teaches the method of claim 26 wherein the light is launched into both ends of the link from a single light source (Figure 23).

***Claim Rejections - 35 USC § 103***

32. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

33. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

34. Claims 2 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udd.

35. Udd teaches claims 1 and 20 above, including the use of a waveguide (Figure 1, items 109 and 107), but does not explicitly teach the apparatus of claim 1 wherein the waveguide is a silica waveguide. Udd instead teaches that the system is to be used with a multiplicity of network arrangements (Column 2, lines 44-45).

36. Since silica is an art recognized and prolific material for waveguides, it would be obvious for Udd to use a silica waveguide since the selection of materials is a matter of design choice for those of ordinary skill in the art and, additionally, since the system of Udd is intended to be compatible with many optical networks (Column 2, lines 44-45). See In re Leshin, 125 USPQ 416.

***Conclusion***

37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (703) 305-5424. The examiner can normally be reached on M-F 9-5.

38. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

39. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

ks
August 5, 2002

ROBERT H. KIM
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